ABSTRACT

There is provided an optical attenuator which provides almost the same degree of attenuance even when the difference of wavelength of two different kinds of input optical signals is small. Further, an optical attenuator is realized with dopant concentration in the technically realizable range in increasing the difference of optical attenuance of two different kinds of input optical signals.

Firstly, almost the same degree of attenuance may be obtained even when the difference of wavelengths is small by canceling the wavelength dependency of attenuance of the dopant by increasing the wavelength dependency of the mode field by raising the refractive index of an optical fiber 5 around an axial core 6a within a core 6 area as compared to that of a peripheral part 6b of the core and by taking into account the type and area of the dopant member to be doped and the ratio of the difference $\Delta 2$ between the refractive indexes of the clad and the axial core and the difference $\Delta 1$ between the refractive index of the clad and the refractive index of the other part, i.e., $\Delta 1/\Delta 2$. Secondly, the difference of attenuances is increased while suppressing the concentration of dopant to the realizable range.